

REPORT TO THE KURRAJONG HEIGHTS COMMUNITY



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Photo credit: <https://maps.six.nsw.gov.au/>

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MEET THE TEAM



Photo credit: Jeremy Braithwaite

- The Kurrajong Heights Brigade is a small but dedicated team
 - For a small team we have large range of skills, experience and knowledge
- Our roles include:
 - Fire ground fire fighting and prevention
 - Command and control positions
 - Logistics
 - Communication
 - Air observer
 - Remote area fire fighting (RAFT)
- We respond to situations at Kurrajong Heights, around the Hawkesbury, around the state and interstate
- Most of our members are long serving, with some members dedicating more than 50 years service to the community
- Every member of the brigade is a volunteer who receives no financial reward
- Our Facebook page is <https://www.facebook.com/KurrajongHeightsRFS>



BRIGADE ACTIVITIES

- Issue permits
- Emergency response
 - Bush fires
 - Structure fires
 - Motor vehicle crashes
 - Search and rescue
 - Ambulance assist
 - Storm damage
- Training
 - Essential basic and advanced fire skills and qualifications
 - Truck licence
 - Cadet training
 - Recertifications
- Hazard Reduction & Fire Fighting



Photo credit: Kurrajong Heights RFS Facebook page



Photo credit: Kurrajong Heights RFS Facebook page

Head on crash on Bellbird Hill

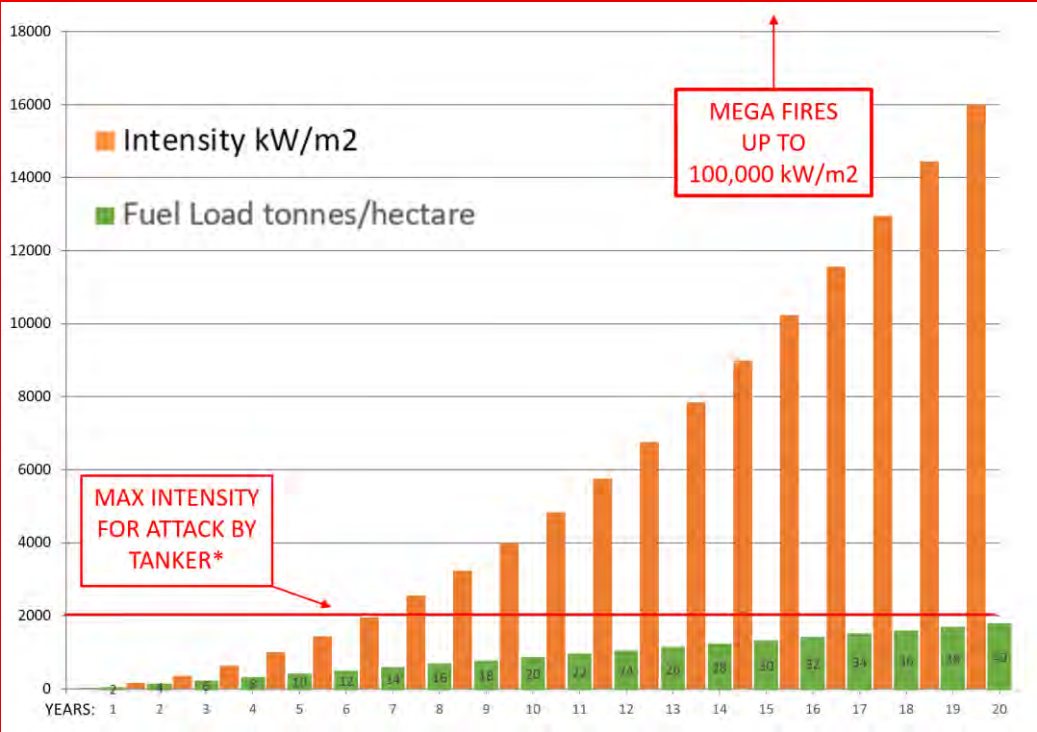


Photo credit: Kurrajong Heights RFS Facebook page



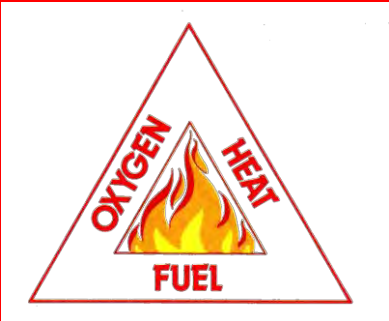
FIRE SCIENCE EXPLAINED/1

- Fuel load increases by 2 tonnes per hectare per annum. The fire intensity grows exponentially
 - After 10 years the unmanaged fuel load will be 20 tonnes per hectare and will have a fire intensity of 4,000 kW/m²
 - Each kW is the same as a 1 bar radiator
 - 2,000kW/m² is the maximum that can be tackled by fire brigade tankers. 4,000 is the maximum by any man using any device i.e. LAT
- Some recent fires have registered an intensity of 100,000 kW



* https://www.dfes.wa.gov.au/safetyinformation/fire/bushfire/bushfireinfoNotesPublications/DFES-infoNote_ForestFuelloadsInUrbanInterface.pdf

People burn the fuel or the fuel burns the people



Fires run on a combination of oxygen, heat & fuel

Reduce the fuel = reduce the fire



FIRE SCIENCE EXPLAINED/2

- Hazard Reduction (HR) burns are a ‘cold fire’
 - Leaves gullies unburnt as retreat areas for animals
 - Hollow logs retained & recolonised
 - Koalas just run up the trees & are safe
- Wild fires over country with no hazard reduction are ‘hot fires’
 - Every living thing is destroyed
 - Complete silence after a fire
 - Soil runs off with the first rain
 - Chokes creeks and gullies
 - Kills the fish
 - May take 100 years to recover



This is taken from the lookout at Burralow Rd in mid-January following the back burn on December 22nd. It was a cold fire and all the leaves are still on the trees

It could be safely burnt thanks to HR in 2012

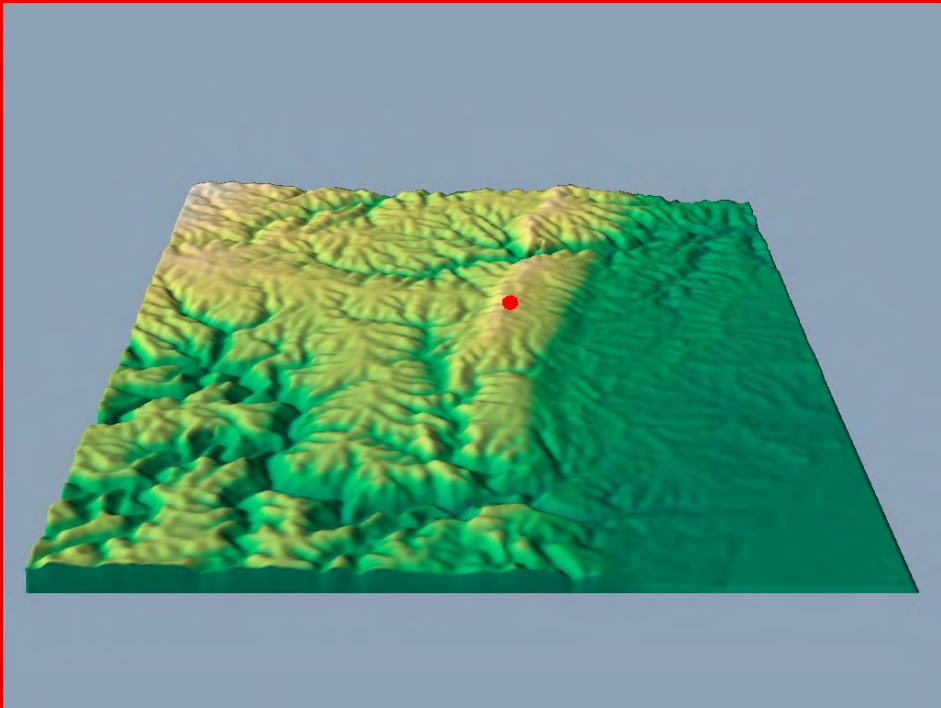
The window for HR is not narrow and ideal conditions usually exist for 4+ months every year



KURRAJONG HEIGHTS ENVIRONMENT

- We're in the worst possible environment to defend
 - Surrounded by bush on 4 sides
 - Top of a mountain ... for every 10 degrees of slope the fire doubles in speed and the intensity quadruples
- Hawkesbury BFMC* covers
 - 2793 square kilometres
 - Windsor in the south
 - Berambing in the west
 - 80km north of Windsor on the Putty Road
 - East to the Old Great North Road

Land Manager	Approx % of BFMC area
National Parks & Wildlife Service	69%
Forest Corporation	1%
Department of Lands	1%
Local Government	1%
Private	28%



* Bush Fire Management Committee

3D Map of Kurrajong Heights



THE EARLY DAYS/1

- Brigade established 68 years ago
 - Small number of families on the mountain
 - Everyone pitched in
 - Hazard reduction was a walk on a Sunday afternoon with a box of wax matches
- First fire engine was Land Rover ute
 - Still in the fire shed
 - Some knapsacks and flat shovels
- Shed opening in 2004
 - Many members still with us
- Never lost a house on the mountain



Photo credit: Kurralong Heights RFS Facebook page



Photo credit: Kurralong Heights RFS Facebook page



THE EARLY DAYS/2

- Prior to the 1990's much of the hazard reduction work was conducted by loggers like the Bucketts:
 - They logged up to 90km from the mill
 - They'd put in all the tracks we'd use for fire trails
 - They logged selectively and would thin the forests and do hazard reduction
 - All at zero cost to the community
- Stock were grazed through the area
- By the end of the 1990's most of the Crown Land and State Forests had been turned into National Parks
 - The logging and grazing have stopped
 - From this time the fuel loads have grown and grown and grown

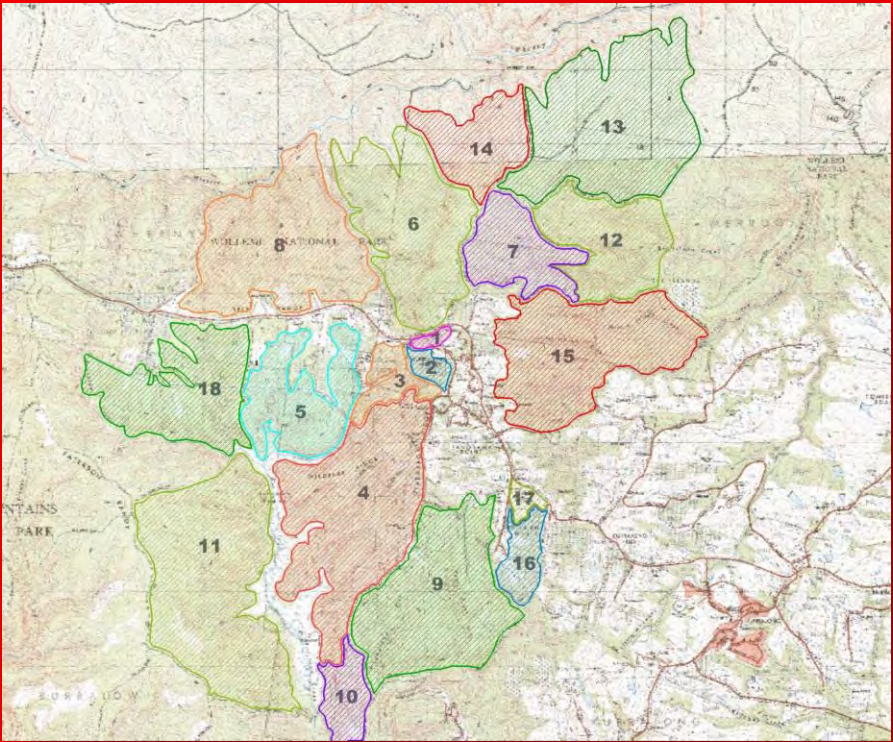


*The Buckettt family mill on
Bells Line of Road*



THE MOSAIC APPROACH

- The KH Mosaic approach to hazard reduction has been in use since the brigade's inception
 - The zone pattern is three plots deep and the cycle of hazard reduction is 12 years
 - In an extreme fire at least one of the zones will provide a 'block'
 - The low heat burn protects fauna and flora
 - Each burn only covers about 70% of the area – stay out of the gullies
- Time since HR burn
 - 1 year – fire can self extinguish
 - 5 years – fire can be easily managed
 - 9 years – fire manageable because it's slowed by adjoining block

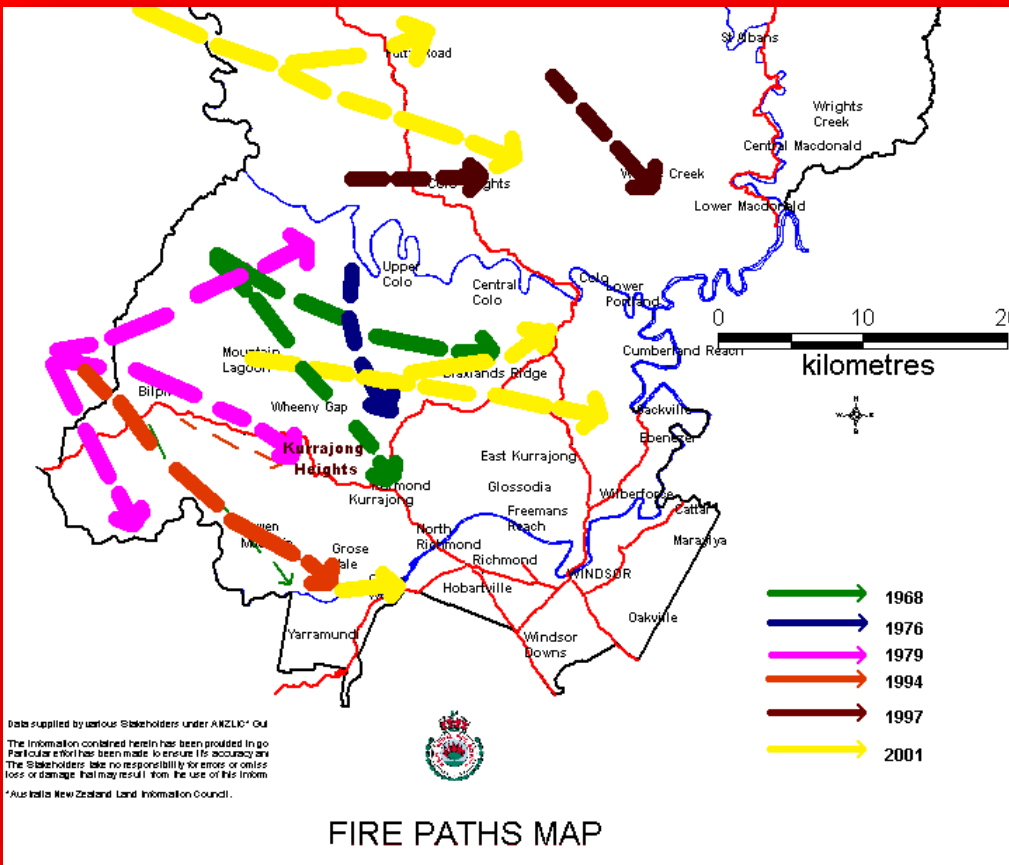


Our mosaic approach burns slowly down the slope. Koalas go up the trees and snakes go into the ground. The RFS preferred approach is to burn a complete circle. It takes less time but destroys more fauna and flora



MAJOR FIRES HISTORY

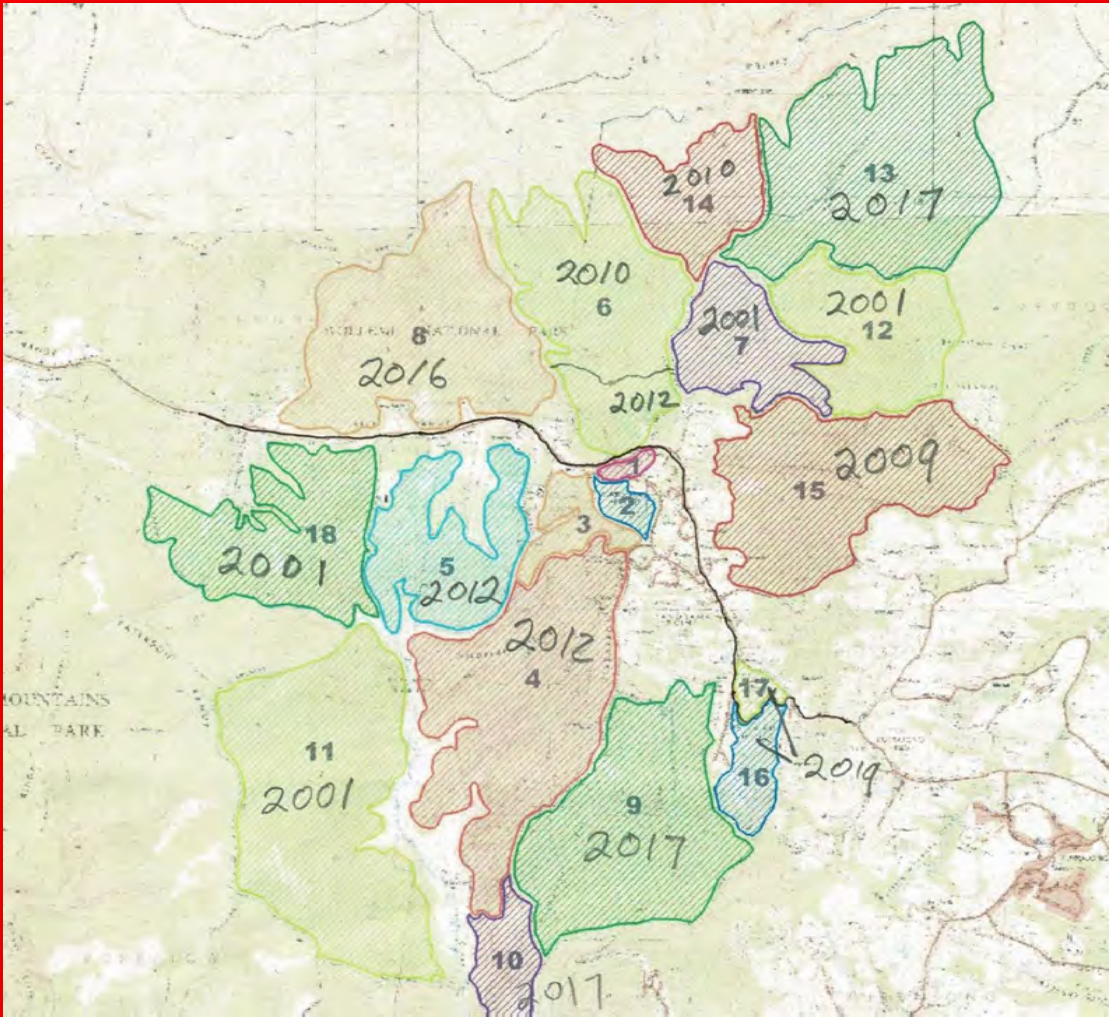
- All our major fires have started in the Wollemi or Blue Mountains National Parks & have been mainly driven by hot and strong NW winds
 - In 2001 the fire entered Yarramundi and Blaxland Ridge with the loss of 14 houses. 4 people sustained injuries. A further 12 houses were destroyed in the Blue Mountains
 - In 2013 the State Mine Fire quickly moved to Bilpin covering over 30km in one day. It was stopped by a back burn along the Mountain Lagoon Rd





PREPARATION AROUND THE VILLAGE/1

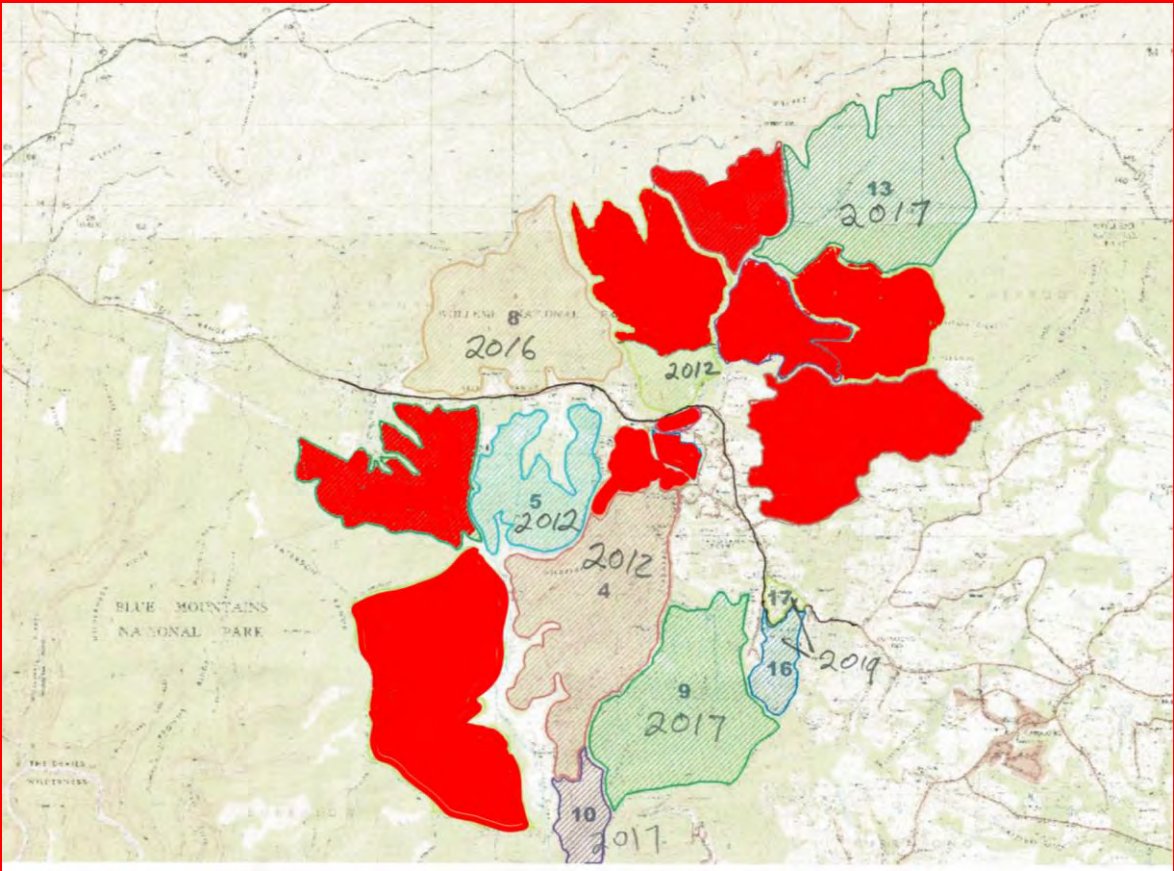
- This shows each part of the mosaic and the year of HR
 - 7, 11, 12 & 18 were burnt in 2001 ... 18 years
 - 1, 2 & 3 had not been burnt for 11 years
 - 15 was burnt in 2009 ... 10 years
 - Part of 6 & 14 were burnt in 2010 ... 9 years
 - 4, 5 and part of 6 were burnt in 2012 ... 7 years
 - 8 was burnt in 2016 ... 3 years
 - 9, 10 & 13 were burnt in 2017 ... 2 years
 - 16 & 17 were burnt in 2019 ... 1 year





PREPARATION AROUND THE VILLAGE/2

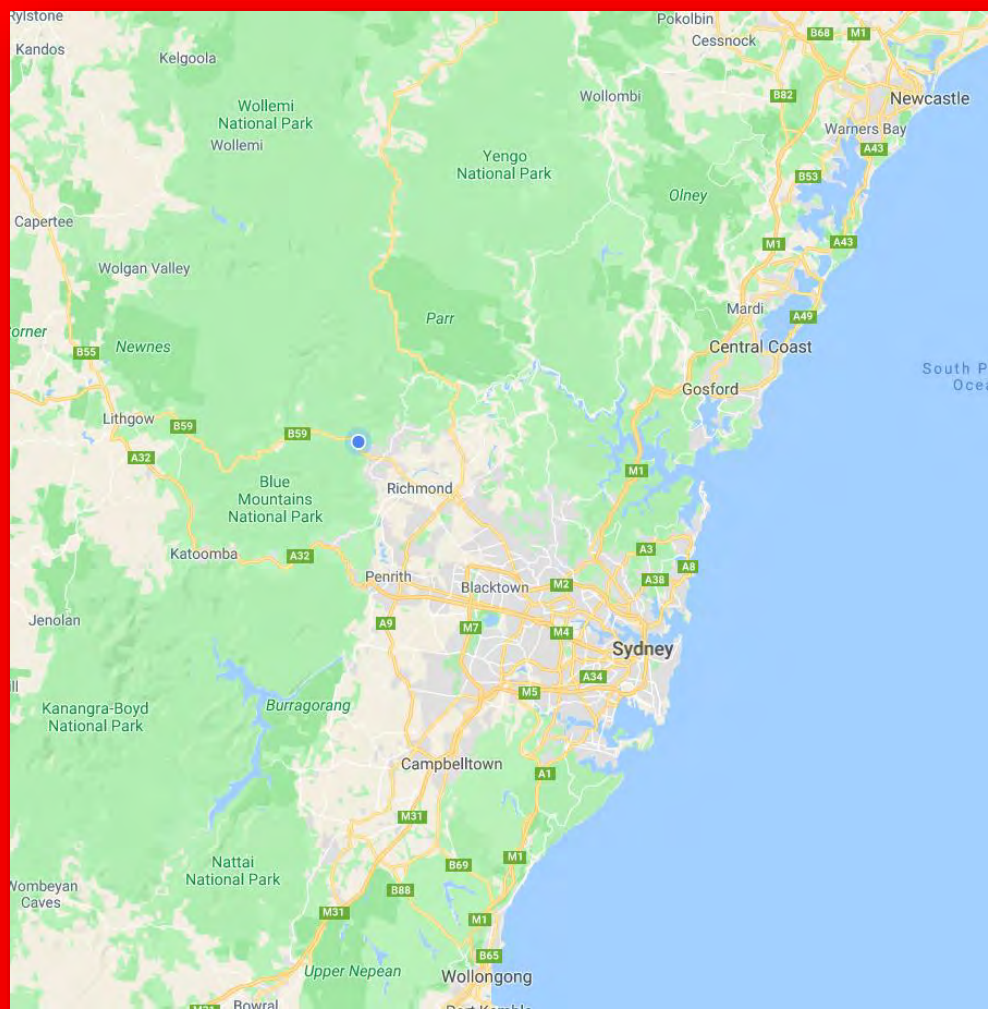
- This is the same map showing all the areas that had not had Hazard Reduction for 9 years or more shaded in red
- Any fire coming from the West or the North would be potentially unstoppable
 - This is why we advised you to evacuate before the bad day on December 21st





PREPARATION – NATIONAL PARKS

- National Parks manages over 7 million hectares of land
 - It completed HR over 135,000 hectares in 2019
 - In the previous 5 years a total of 635,000 hectares were burnt
 - This amount is double what was burnt in the previous decade
- This is an average of 1.9% per annum
 - Another way to look at this is it would take more than 50 years to complete HR in our parks
- Clearly these targets are not compatible with responsible management of our bushland and the safety of our community



National Parks completely encircle Sydney and comprise 69% of our Hawkesbury land

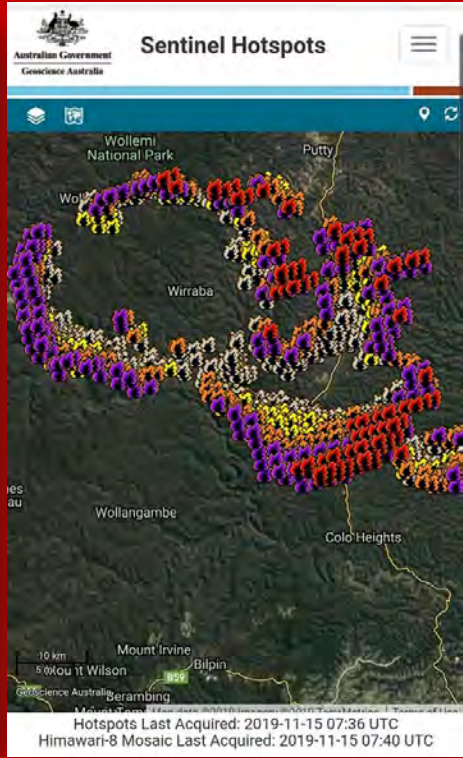
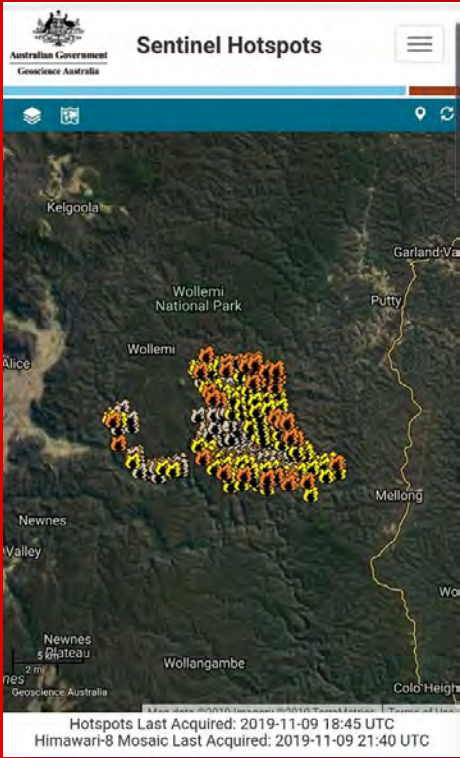


GOSPERS MOUNTAIN FIRE/1



Photo credit: Jeremy Braithwaite

- The Gospers Mountain Fire started with a lighting strike on October 26th
 - After a couple of weeks it reached the Putty Rd
 - By mid November it had crossed the Putty Rd and was threatening St Albans and the Upper Macdonald





GOSPERS MOUNTAIN FIRE/2



Photo credit: Jeremy Braithwaite

- On 23rd November Mountain Lagoon Brigade called a community meeting
- Explained how they would put in containment lines along Mountain Lagoon Rd and across to Colo Heights
- Brian Williams attended
 - 3rd from left, front row



GOSPERS MOUNTAIN FIRE/3



15th December

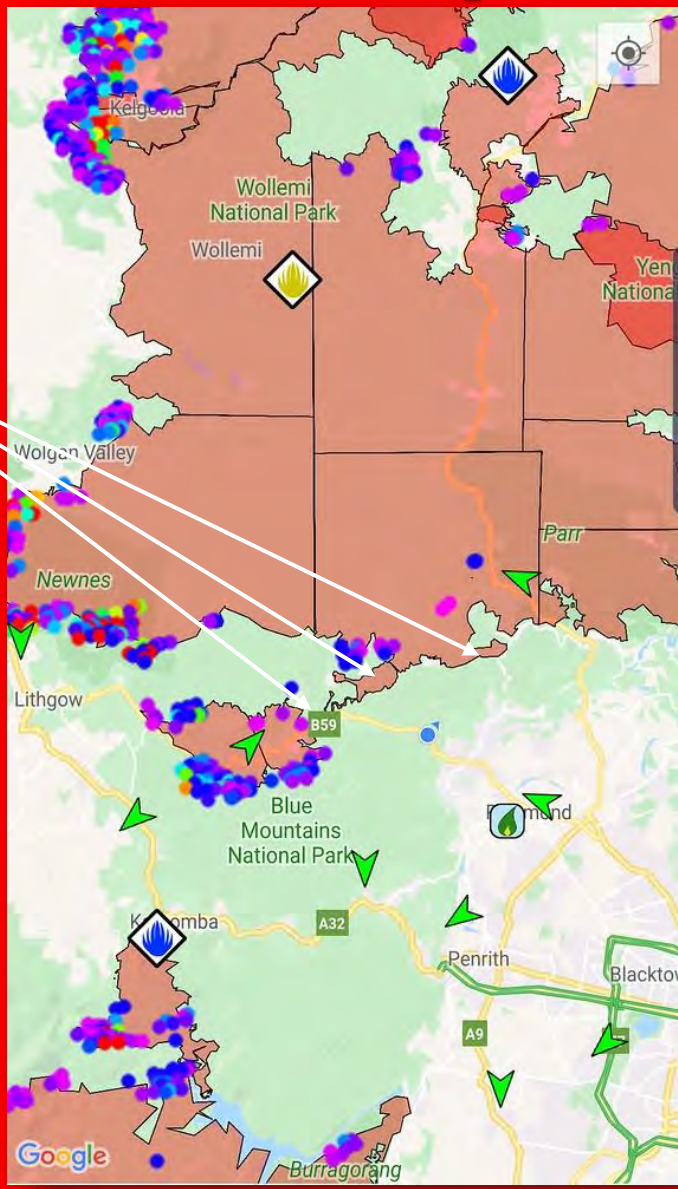
View from Burralow Rd lookout

Photo credit: Jeremy Braithwaite



GOSPERS MOUNTAIN FIRE/4

- This shows the status on 18th December
 - The containment lines from Bilpin to Mountain Lagoon to Colo are in and the back burn has advanced towards the main fire front
 - The back burn from Mt Wilson to Bell was unsuccessful and crossed Bells Line of Road into the Grose Valley
 - We hold a community meeting at Kurrajong Heights and advise all residents who are not well prepared AND able bodied to evacuate
 - A majority of residents took this advice, left their properties well prepared, and had maps and instructions. This made our jobs a lot easier



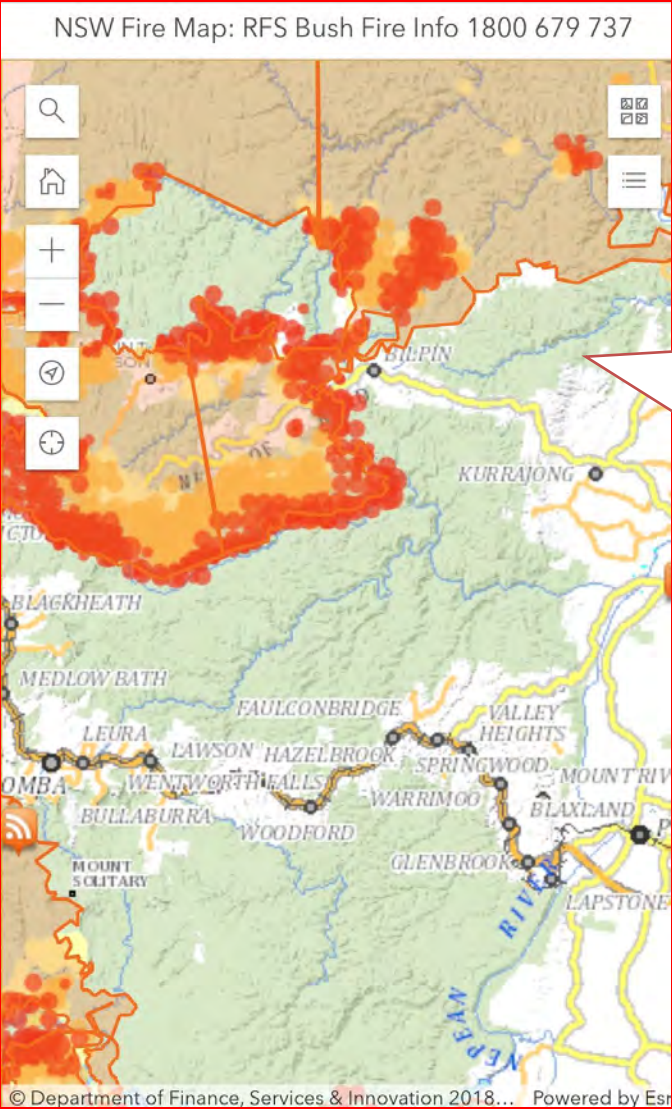


GOSPERS MOUNTAIN FIRE/5





GOSPER MOUNTAIN FIRE/5



Position on 20th December
Red dots are active hotspots and show what is burning
Red shaded area shows what has been burnt

RFS issues fire path prediction for 21st December showing Kurrajong Heights being engulfed by fire





GOSPERS MOUNTAIN FIRE/6

- December 21st
 - Very hot and windy conditions
 - Heavy smoke and an inversion layer damped the wind, but the the fire was very close to Kurrajong Heights by late afternoon
 - Then suddenly a huge southerly arrived
 - Gary Jol was at the top of Warks Hill Rd when it hit
 - All the smoke cleared and the whole fire erupted. “We looked at each other and our hairs were standing on end ...”
 - The fire took off and destroyed a number of buildings around Bilpin
 - Without our mosaic pattern of hazard reduction in place, particularly behind Glen Huntley, this fire could have proved devastating for Kurrajong Heights



Photo taken by Lyn Ward from Grose Vale Road near Kurrajong looking up to the escarpment



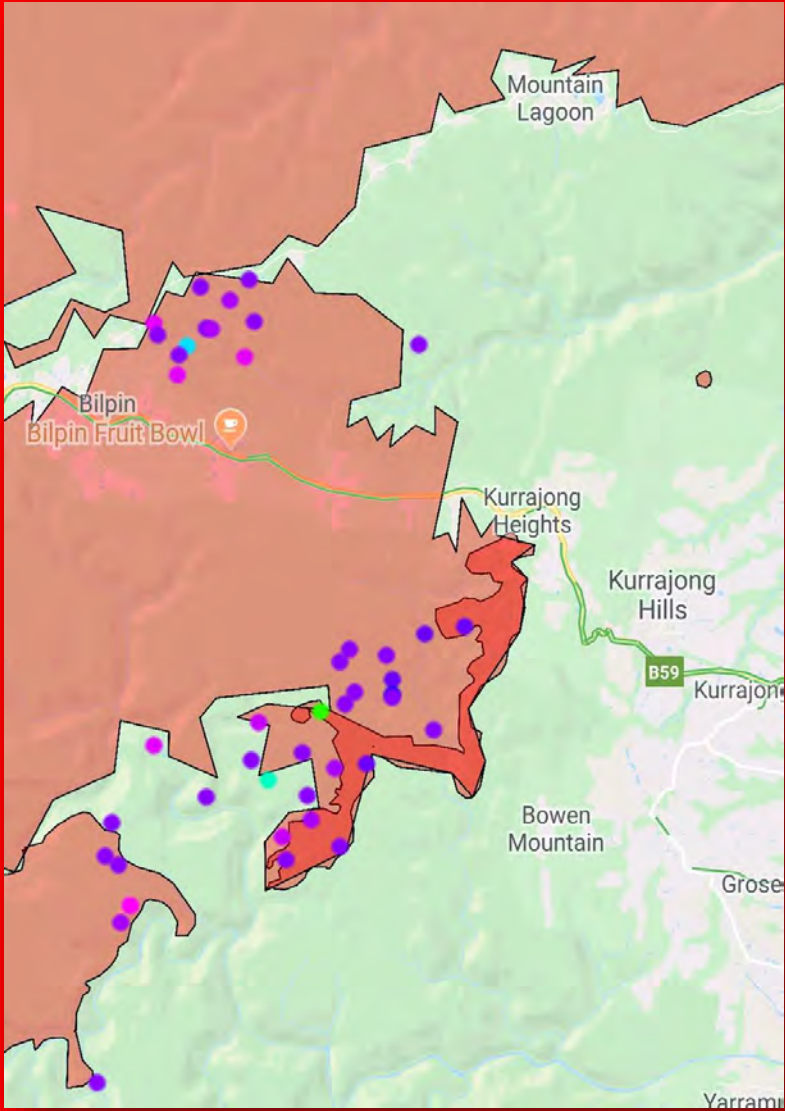
GOSPERS MOUNTAIN FIRE/7





BACKBURNING OPERATIONS/1

- December 22nd
 - The wind died down and a week of calm weather was forecast
 - Under our emergency powers we were able to immediately put into place the protection that we had not been allowed to do earlier:
 - Back burning and containment lines around Kurrajong Heights and down Burrelaw Rd and all the way to the Grose River ... in total more than 20km
 - The back burn was very successful and joined up with the main fire
 - Bowen Mountain remained exposed and Kurrajong Heights remained exposed to a fire from the North





BACKBURNING OPERATIONS/2

- December 29th on our Facebook page:
 - Crews have been working tirelessly the last few days on local containment lines for the Gaspers Mountain Fire. Buralow Rd, Tabaraga and Donnas Track containments have linked up with Wentworth Creek, Blue Mountains
 - The Gaspers Mountain Fire is still active in the vicinity of Mt Lagoon/Glenara Road area. This means the fire is working its way towards Wheeny Creek
 - There is currently RAFT teams working in this area to keep the fire on the 'Mt Lagoon' side of Wheeny Creek. We are hoping it will eventually come to a stop and burn itself out
 - There are 3 fallback lines in place. Crews, machinery etc have also been working on these.....
 - From 'Rossi's' along the Middle Island track to Middle Island
 - From 'Rossi's' towards Little Island
 - From East Street / Leidich Lane to Douglas Farm Rd
 - These containment lines will be used if the Wheeny Creek containment lines cannot hold the main fire front that is approaching
- We could only send the RAFT teams into the Wheeny Creek area because of prior Hazard Reduction

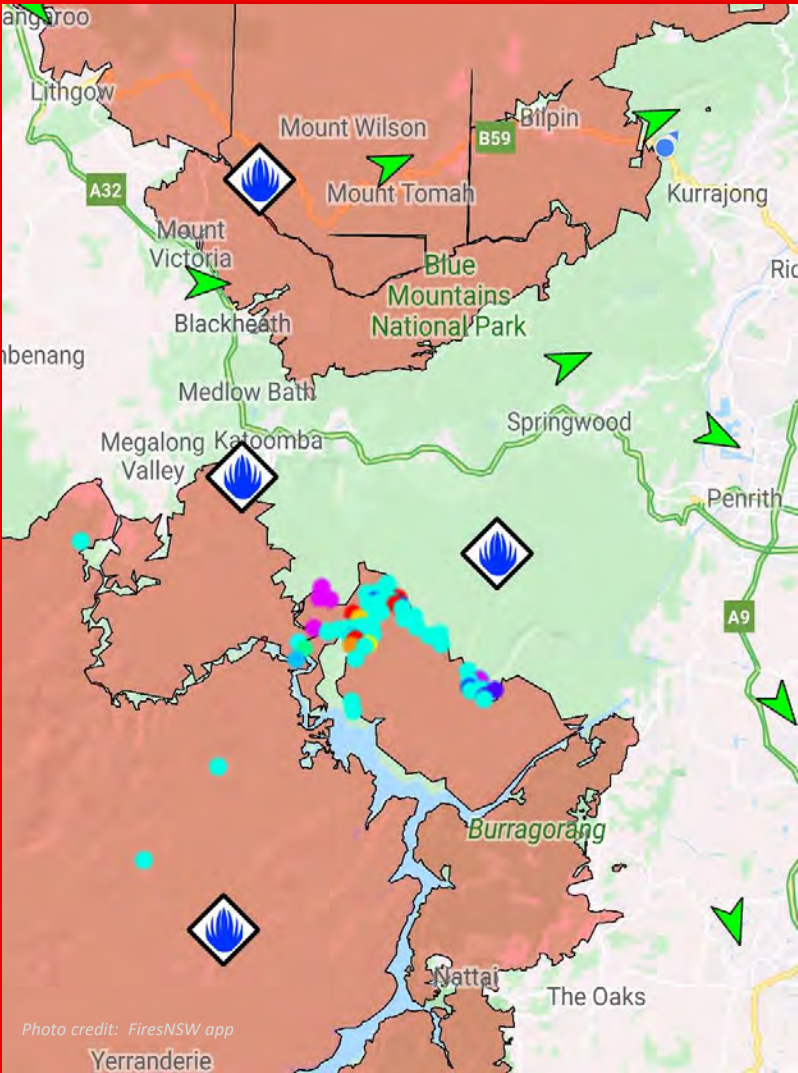


Photo credit: Joep Berben



BACKBURNING OPERATIONS/3

- January 7th
 - Another hot day and the wind is from the west
 - The containment lines that have been put down in the Grose from Donna's Track are all successful
- The rains come!
 - At long last the weather comes to our aid
- The Gospers Mountain fire was officially declared to be contained on the 14th January
- Previous longest fire was 44 days. This was 79 days





KURRAJONG HEIGHTS BRIGADE SUMMARY

- Over 79 days, our 31 active members were part of 107 crews tasked during the campaign
- The Gospers Mountain fire is believed to be the world's largest fire from a single ignition point, burning approximately 515,000 hectares, with a perimeter of 1,380 km
- This fire was dangerous, exhausting and devastating. Even for seasoned fire fighters it was difficult to come to terms with amount of loss and devastation



Photo credit: Jeremy Braithwaite



THANK YOU ALL VERY MUCH!!

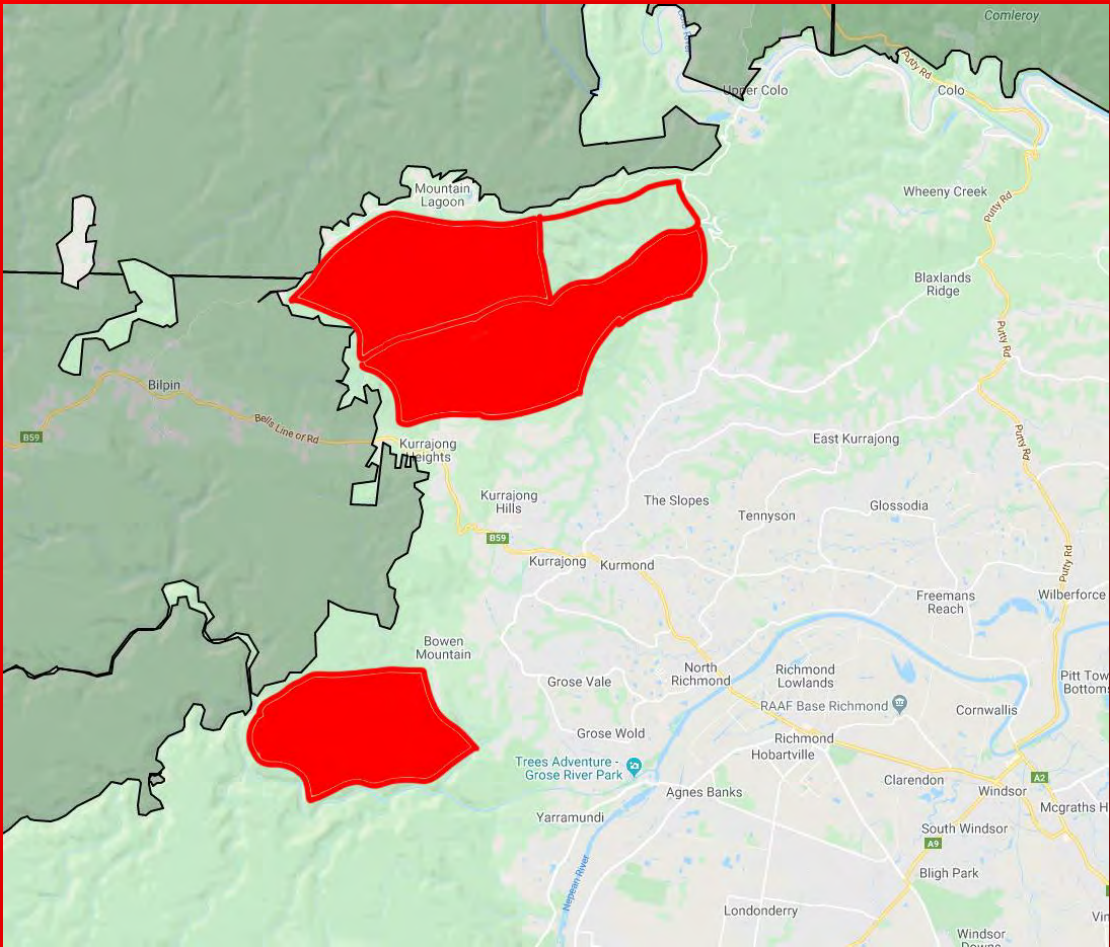
- The support given to us by our community during this time was invaluable
 - Our community generously donated time, food, drinks, money and their moral support
 - People came to the fire shed to help and to feed us
- These businesses all made an incredible contribution
 - Special mention to Lochiel House who were just incredible
- Many thanks also to all the neighbouring brigades, others from further afield and a very special thanks to Fire & Rescue NSW
- Your support really meant a great deal to all of us





CURRENT STATUS

- Our main exposures
 - Areas to the north and north east of Kurralong Heights
 - 20 years of fuel is of major concern
- The community needs to remain vigilant to see that these fuels are reduced as soon as possible





QUESTIONS

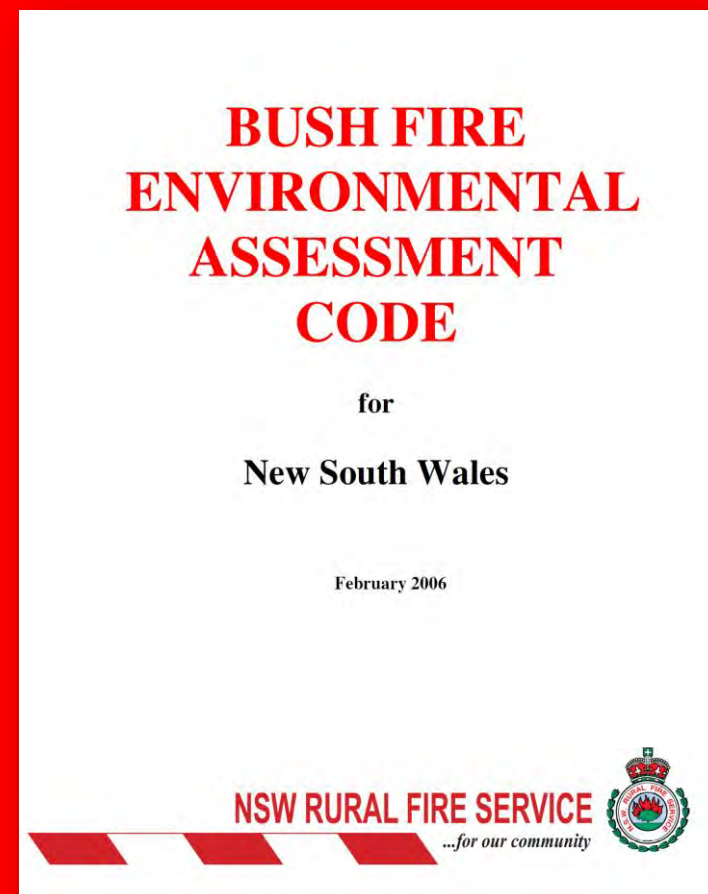
- How are Hazard Reductions Approved?
- What is Aboriginal Burning?
- Do large Air Tankers help?
- Does Hazard Reduction increase CO2 levels?
- Your questions
- What's Next? Actions ...





HOW ARE HAZARD REDUCTIONS APPROVED?/1

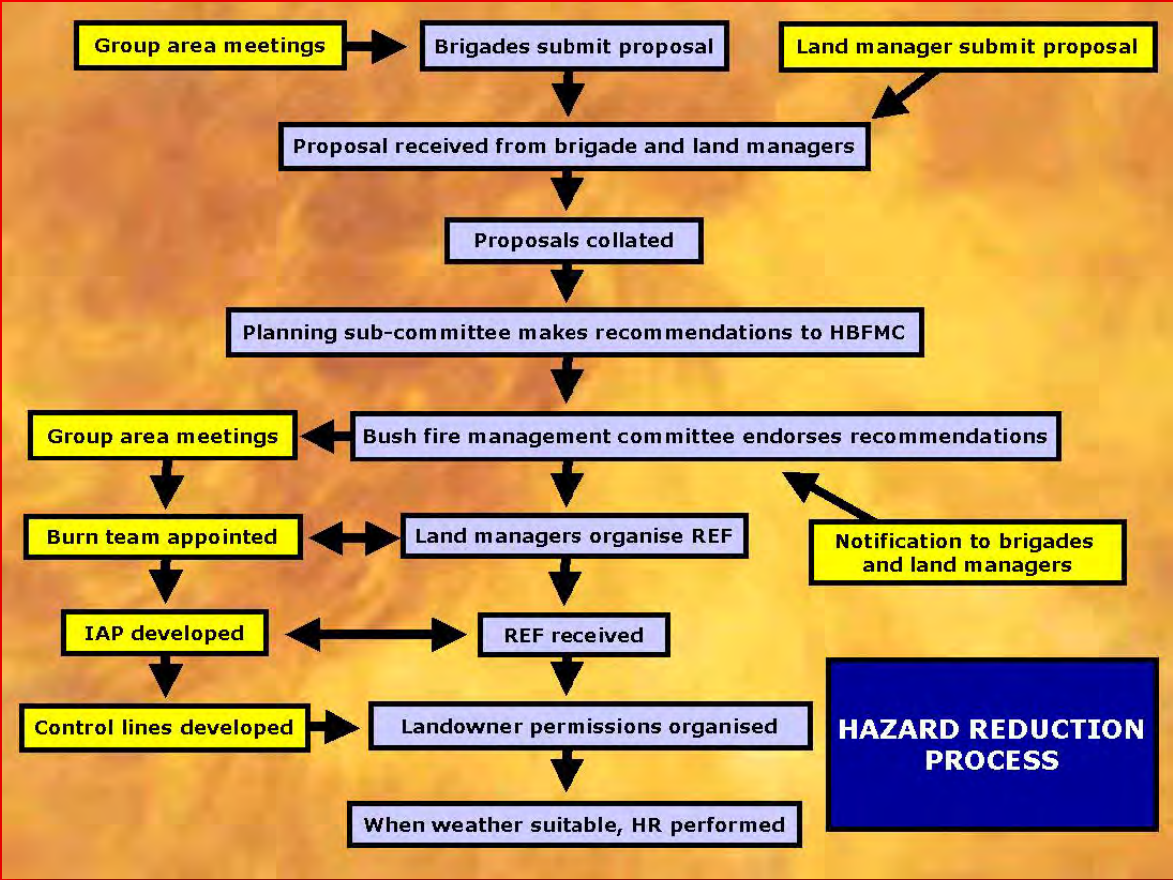
- All HR burns must comply with the Bushfire Environmental Assessment Code. Requires
 - All land owners and managers approval
 - Determination of vegetation types. This is used to determine the fire interval
 - Fire intervals at Kurrajong Heights range from 10 to 25 years
 - Identification of all threatened species
 - Identification of aboriginal heritage sites
- The threatened species list extends to many pages
- Failure to observe all requirements is a criminal act





HOW ARE HAZARD REDUCTIONS APPROVED?/2

- Once the Environmental Bushfire Assessment Code has been navigated the brigade can submit a proposal to the Hawkesbury Bush Fire Management Committee
 - The proposal may not even get past the planning sub-committee
 - The HBFMC members represent many different agencies and groups
 - The approval process can be long and complicated. From application to completion of the hazard reduction can take many years





WHAT IS ABORIGINAL BURNING?/1

- A different form of mosaic burning where each vegetation type is burnt at different times of the year
 - When one vegetation is ready to burn the neighbouring vegetation will be green and will put the burn out
 - They never light a fire unless they know where it will go and where it will stop
 - Cool burns give off a white smoke and do not go up the trees or into the canopy
 - During the fire the insects and other small animals can crawl up the trees to safety, while ants and snakes can retreat down into their nests
- The fire is burnt in a circular pattern from the right ignition point
- Initially the country may be burnt every year until weeds and other invasive species are removed. In healthy country it may be every 2 or 3 years or more between burns
- Some country like rainforest is not burnt; but the country round it is burnt to protect it
- Hazard Reduction is a by-product of restoring a healthy landscape with abundant food for people, animals and birds. This country will not generate a mega fire



www.mulong.com.au: Local community, rangers and rural fire service members 'walk with the fire', out on country at a Cape York fire workshop



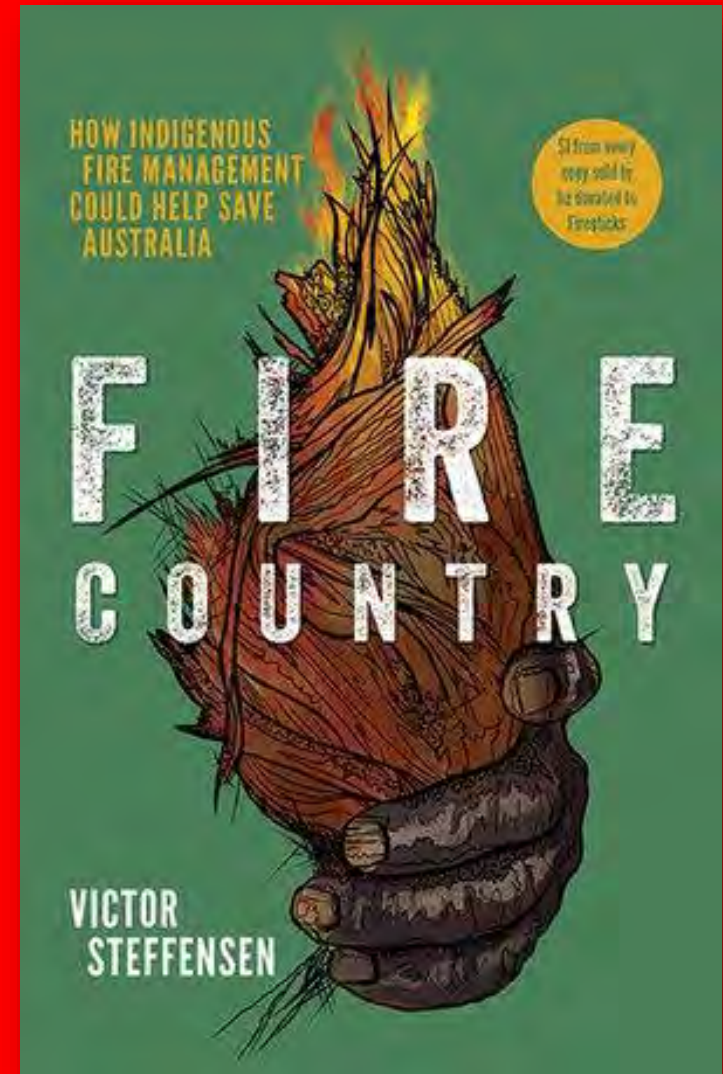
www.mulong.com.au: In 2015, the Tasmanian Aboriginal Fire Team reimplemented traditional burning – an historic event



WHAT IS ABORIGINAL BURNING? / 2

Further reading:

- Victor Steffensen’s book “Fire Country” was released on 18th February and describes his life’s work learning how to manage the land with fire and teaching the skills to others. Required reading!
 - Victor’s website:
<http://www.mulong.com.au/>
- Koori Firesticks:
<http://www.kooricountryfiresticks.com.au/home.html>
- Living Projects. Land management around the country:
<http://www.livingknowledgeplace.com.au/ausmap.php>



<https://www.booktopia.com.au/fire-country-victor-steffensen/book/9781741172268.html>



DO AIRCRAFT HELP?

- **Benefits**
 - LATs drop a large load of retardant in one place
 - Helicopters can slow impact of fire and have short turn around time
 - Helicopters can assist and communicate with ground crew closely
- **Disadvantages**
 - LATs are expensive and have a long turn around time
 - Aircraft are restricted by smoke and wind
 - Aircraft are governed by air bases, fuel, water or retardant sources and external priorities
 - We have to clear the area before a LAT drop. If you were underneath it could really harm you
- When aircraft are required for fire suppression it is clear that this is managing under crisis



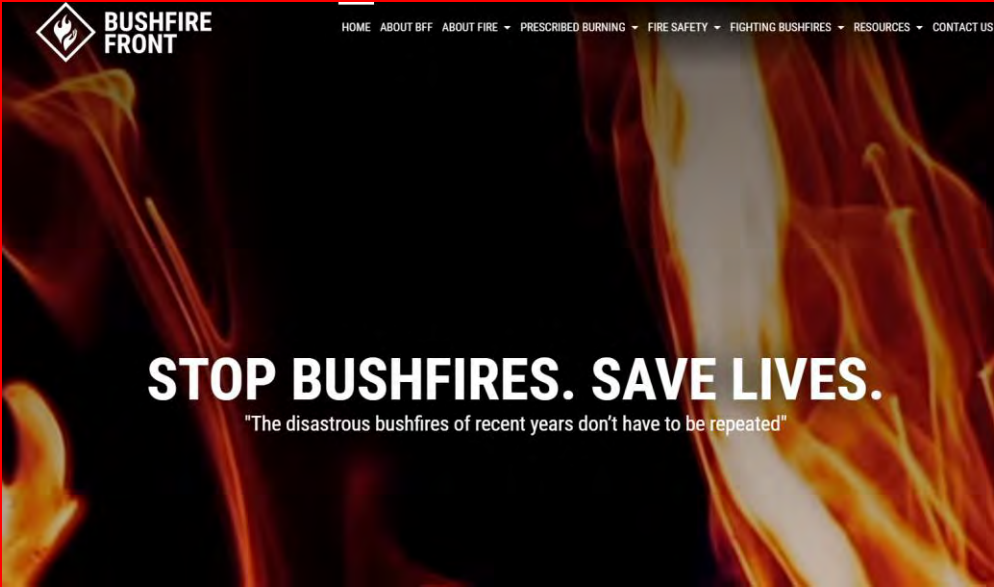
Photo credit: Flight Global

The retardant contains a pink dye and is meant to be bio degradable. If it drops on your roof it will also get in your water tank and this will need to be emptied and professionally cleaned



DOES HR INCREASE CO₂ LEVELS?

- The quick answer is no
 - The choice is essentially between trying to suppress large wildfires caused by minimal HR or conduct frequent HR burns
 - The megafires release 40 or 50 million tonnes of CO₂
 - They also destroy the tall trees which are required to capture the carbon
 - The HR burns, or better the aboriginal burns, release a small amount of carbon which is quickly recaptured and are essentially neutral in terms of CO₂ emissions

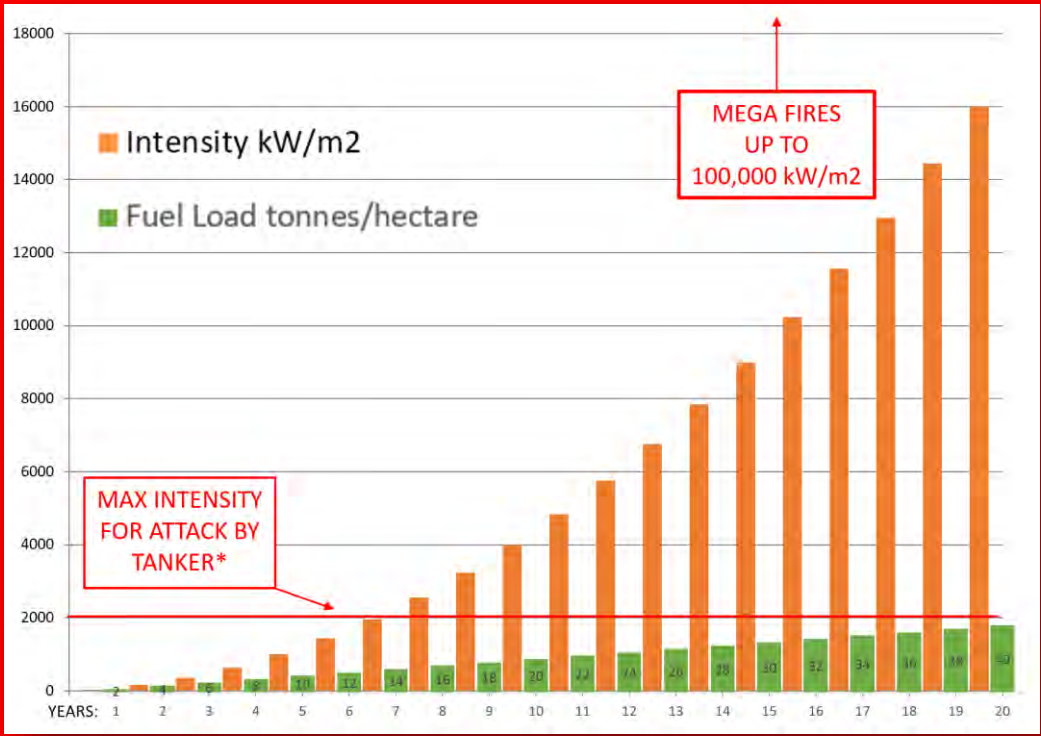


Read the full paper by Roger Underwood, David Packham and Phil Cheney:
<https://www.bushfirefront.org.au/resources-2/further-reading/bushfires-and-global-warming/>



IS CLIMATE CHANGE A FACTOR?

- Climate change can produce longer hotter summers and increased fuel loads
 - Increases the imperative for HR
- During a major fire
 - A 1 or 2 degree temperature increase makes little difference to the fire behaviour
 - The main contributor to fire intensity is the fuel loads
 - Double the fuel load = double the rate of spread AND quadruple the intensity of fire
- The danger for us is if the correct management of the bush gets lost in political debate
 - But once everyone in the community understands that aboriginal burning can restore the bush and make it pristine again, we have a clear way forward



* https://www.dfes.nsw.gov.au/safetyinformation/fire/bushfire/bushfireinfo/NotesPublications/DFES_InfoNote_FireFuelLoadinUrbanInterface.pdf



WHATS NEXT? ACTIONS

- We will face the same catastrophic fires over and over again unless something changes
 - You can make this change happen and be part of the solution
 - You can do this by lobbying for widespread low intensity, cool burning hazard reduction
- Lobby by writing one email and collectively send to the following:
 - Local Government
 - State Government
 - Federal Government
 - Hawkesbury RFS
 - RFS Commissioner
 - Director General Office of Environment and Heritage
 - NPWS Office, Richmond
 - Hawkesbury Bush Fire Management Committee c/- RFS





LINKS TO RELEVANT INFORMATION



- There are some excellent resources to increase your bushfire knowledge and understanding
- Some websites include:
 - The Volunteer Fire Fighters Association
www.volunteerfirefighters.org.au
 - Bushfire Front
www.bushfirefront.org.au
- Leading bushfire experts include:
 - Victor Steffensen
 - David Packham
 - Phil Cheney
 - Vic Jurskis